Garden Creek TMDL

Buchanan County

Public Meeting

Arthur Butt

VA DEQ

Regulations

Impairment

Garden Creek Not Supporting Recreation Use and Aquatic Life Use

- **General Standard** (Benthic) (1998)
- **Bacteria--**Total Fecal Coliform,
  - 17 violations in 29 samples (2004)
- **PCBs** reported in fish tissue (2004)

Terms

- **Impairment**
- **Water Quality Standard**
  - Designated use
  - Criterion
    - Words (narrative)
    - Number (numeric)
- **Total Maximum Daily Load**

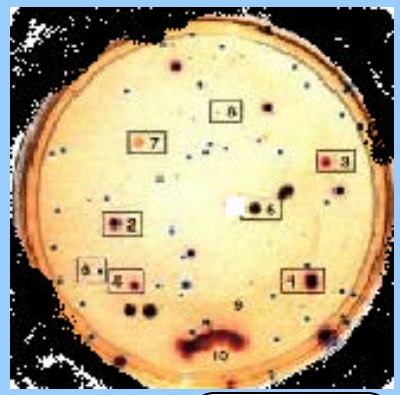
use

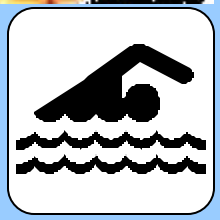
criterion

DEQ

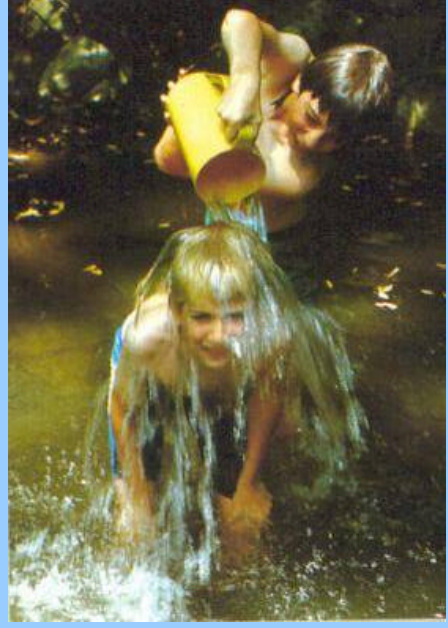
Water Quality Standards

- **To protect designated uses**
  - **Recreational use** is measured by the number of colony forming units of bacteria in the water
  - **Aquatic life use** is measured by the numbers and varieties of aquatic organisms that live in our streams





Designated Uses



Recreation *(swimming and boating)*

Aquatic Life

balanced, indigenous including game fish

Trout Waters

Wildlife

Edible natural resources

Fish

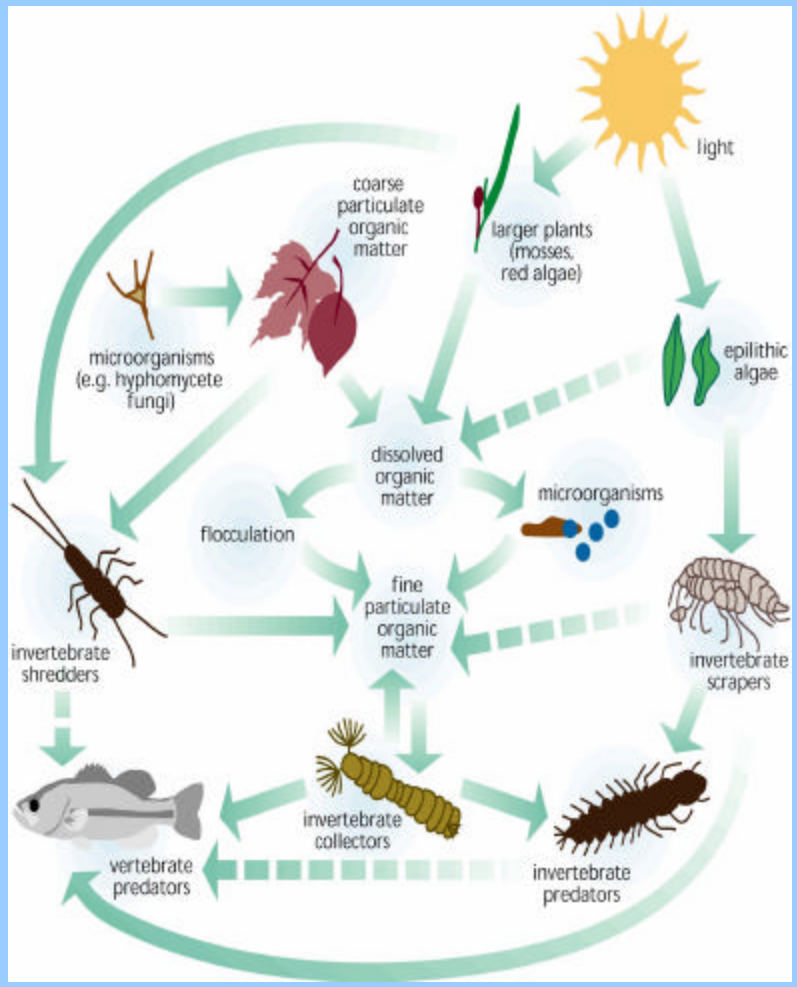
Shellfish

Public Water Supply

Aquatic Life Use

Good indicators of Water Quality

- High diversity
- Respond to environmental conditions predictably and quickly
- Wide spread distributions and relatively easy to identify



Applicable Water Quality Standards

- **Designated Use** (9 VAC 25-260-10): *"All state waters … are designated for the following uses: …the propagation and growth of a balanced, indigenous population of aquatic life…which might reasonably be expected to inhabit them;…"*

- **General Standard** (9 VAC 25-260-20): "*All state waters shall be free from substances…which are harmful to human, animal, plant, or aquatic life*."

- **Bacteria Standard** (9 VAC 25-260-170): "*A. In surface waters…the following criteria shall apply to protect primary contact recreational uses:..1. Fecal coliform …"*
- Effective January 2003

Recreation Use

1. Fecal coliform not to exceed
   - a geometric mean of 200/100 ml over two + samples a month nor
   - 400/100 ml for more than 10% of the total samples over a month exceed.
2. *E. coli* and enterococci shall not exceed (per 100 ml) :

	Geometric Mean	Single Sample Maximum
Freshwater		
E.coli	**126**	**235**
Saltwater and Transition Zone		
enterococci	**35**	**104**

EPA Recommends *E. coli* and/or *Enterococci* over Fecal Coliform since there are better indicators of human health risk from recreation use such as primary contract (swimming)

What is a TMDL or Total Maximum Daily Load?

- Amount of a pollutant that a waterbody can receive and still meet water quality standards
- It is pollutant specific
  - Aquatic Life Stressors
  - Bacteria
- It is a process to restore impaired waters
- A special study that:
  - Identifies all significant pollution sources,
  - Calculates amount of pollution from each source, and
  - Calculates pollution reductions, by source, needed to attain water quality standards.

Total Maximum Daily Loads
- Mandated by Law -

- **Federal 1972 Clean Water Act requires**
  - Water Quality Monitoring
  - Periodic Assessment and Impaired Waters Listing
  - Develop TMDLs for Impaired Waters
- **Virginia's Water Quality Monitoring Information and Restoration Act (WQMIRA) of 1997 requires**
  - TMDLs for Impaired Waters
  - An Implementation Plan
- **EPA 1999 Consent Degree requires TMDL Reports for all 1998 listed streams by 2010**

Summary
- TMDL -

- Amount of a pollutant that a waterbody can receive and meet water quality standards
- Pollutant specific (bacteria, PCB, etc.)
- Restore impaired waters
- A special study that:
  - Identifies significant pollution sources,
  - Calculates amount of pollution from each source, and
  - Calculates pollution reductions, by source, needed to attain water quality standards.

What Next?

Implementation Plan

We Are Here

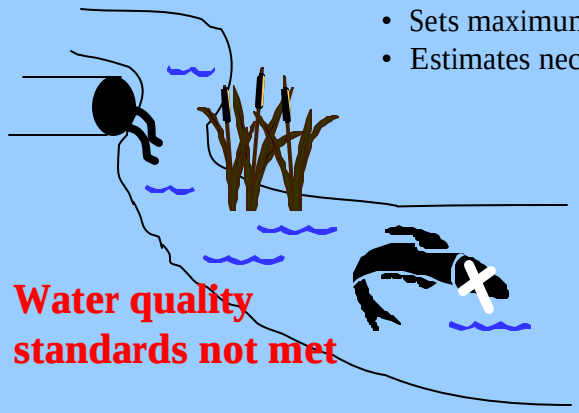
- Identifies permit controls, best management practices, or remediation options needed to make necessary pollutant reductions

Total
Maximum
Daily
Load

Implementation

Polluted

- Calculates amounts from each source
- Tracks pollutants in the system
- Sets maximum pollutant load
- Estimates necessary pollutant reductions

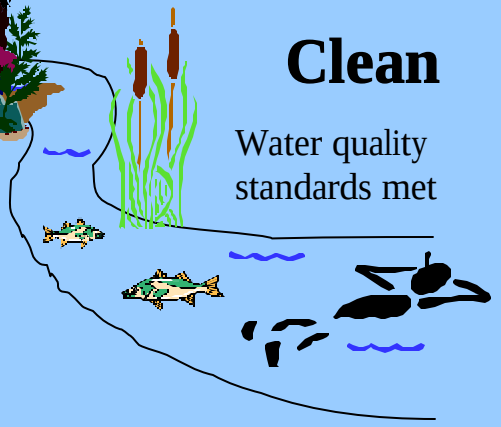


Water quality standards not met

The Process

Clean

Water quality standards met



Information

- **tmdl**
  - **Virginia**
    - **DEQ homepage -** http://www.deq.virginia.gov/tmdl
  - **Federal**
    - **EPA homepage -** http://www.epa.gov/owow/tmdl/

Thank You !

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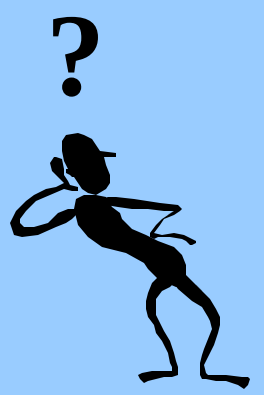
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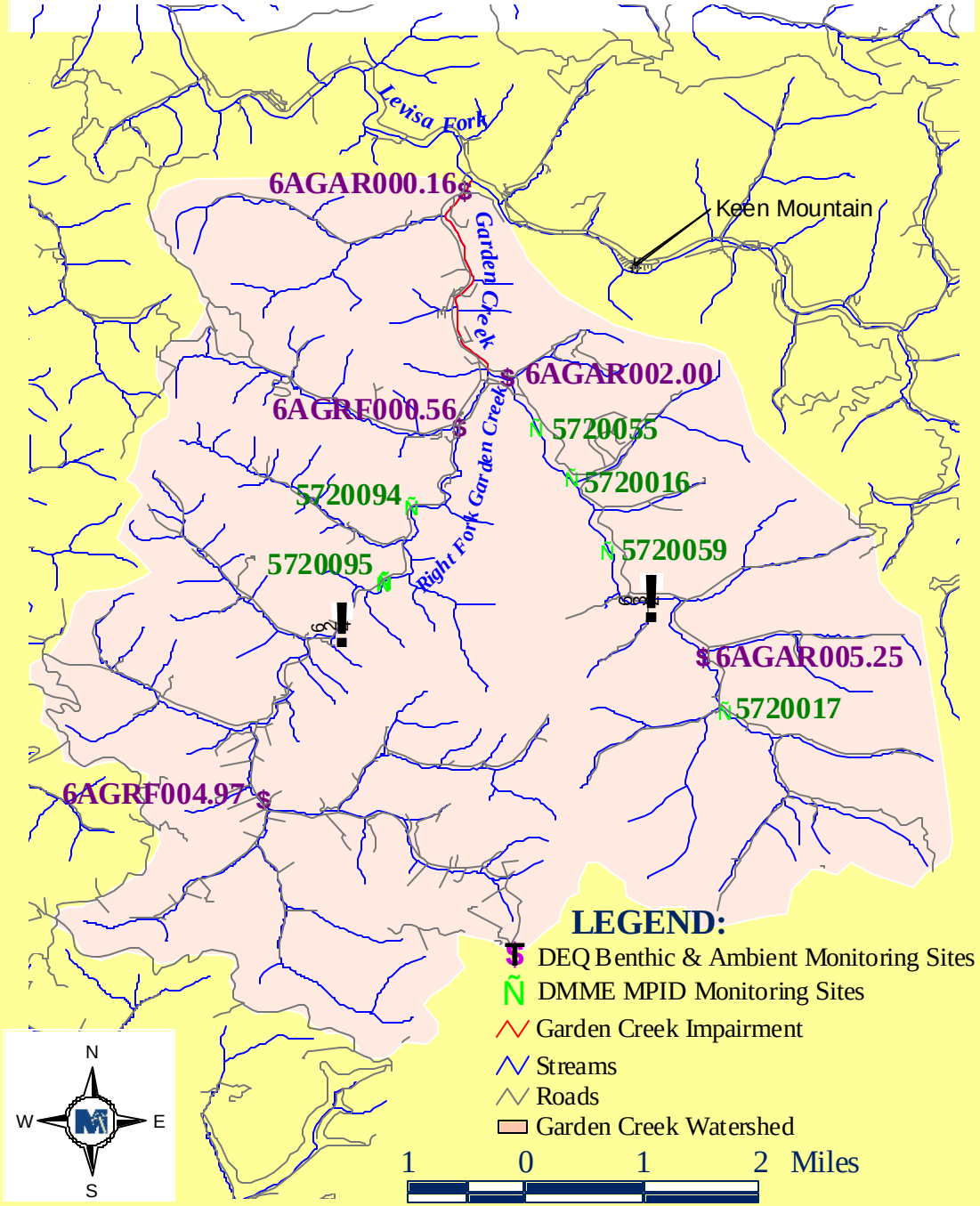
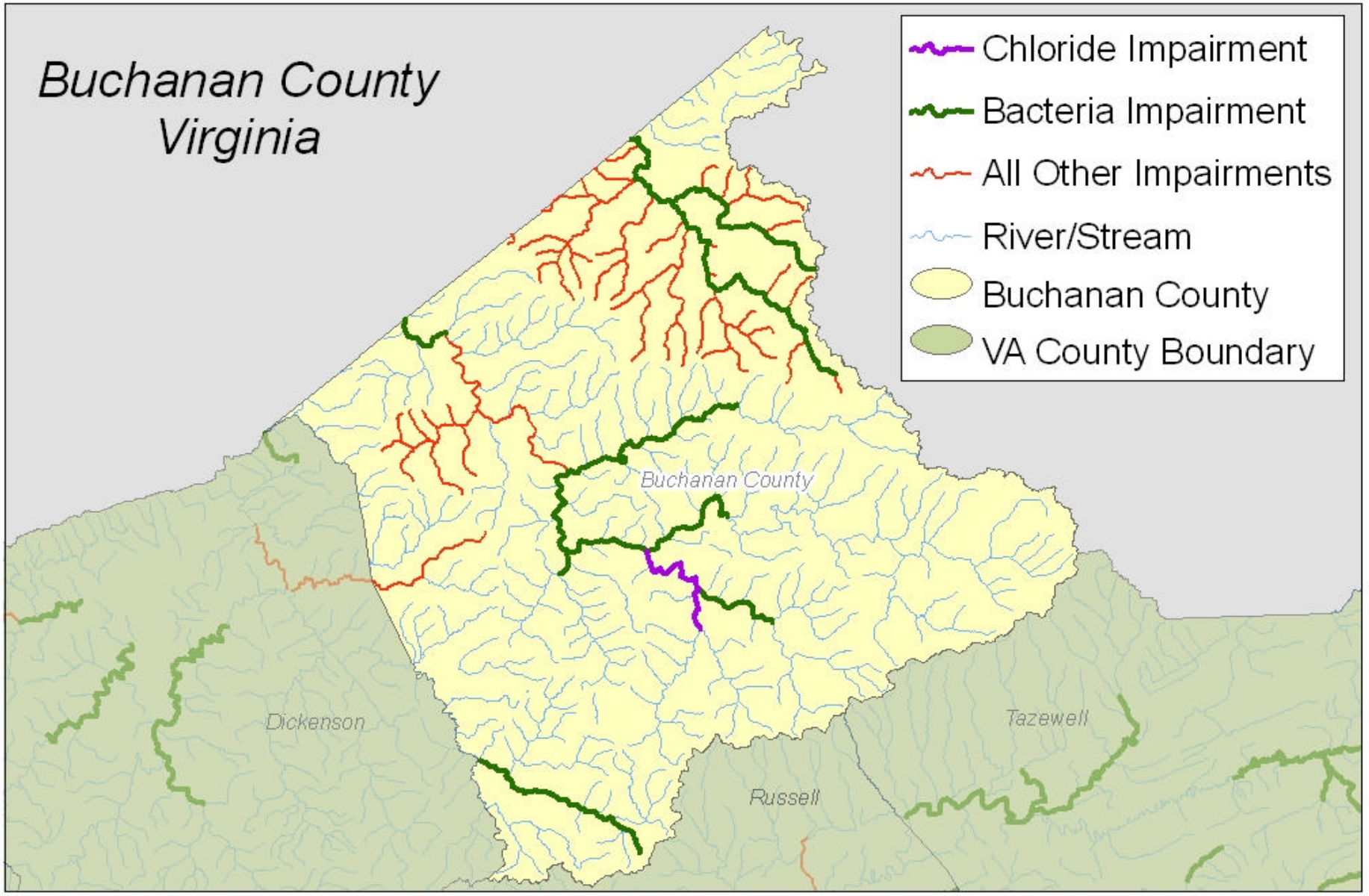
Extra Slides


Levisa Fork
6AGAR000.16
Keen Mountain
Garden Creek
6AGAR002.00
6AGRF000.56
5720055
5720016
5720094
Right Fork Garden Creek
5720059
5720095
6AGAR005.25
5720017
6AGRF004.97
LEGEND:
DEQ Benthic & Ambient Monitoring Sites
DMME MPID Monitoring Sites
Garden Creek Impairment
Streams
Roads
Garden Creek Watershed
1 0 1 2 Miles
N
W
E
S

Virginia Waters by Jurisdiction and Impairment

Location / *Water Type*	*Impairment*	*Size Units**
BUCHANAN CO		
RIVER		MILES
Tennessee and Big Sandy River Basins		
	Benthic-Macroinvertebrate Bioassessments (Streams)	81.39
	Chloride	5.76
	Escherichia coli	34.68
	Fecal Coliform	42.75
	PCB in Fish Tissue	133.50
	Temperature, water	5.32

Note: USGS/EPA based sizes (100,000 scale). Addition of these waters for a statewide total are not possible. Waters are shared by and AU's may extend beyond jurisdictional boundaries.


Buchanan County
Virginia
Chloride Impairment
Bacteria Impairment
All Other Impairments
River/Stream
Buchanan County
VA County Boundary
Buchanan County
Dickenson
Russell
Tazewell

Use Attainability Analysis

- Physical analysis including public access, proximity to residential areas, substrate, depth, width, etc…
- Chemical analysis
- Potential for water quality improvement
- Economic/affordability analysis
- Not existing use
- Provide for attainment and maintenance of downstream water quality standards
- Rulemaking process/public participation